

Study of magnetic fluids using infrared spectroscopy

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The energy of a photon of the infrared (IR) spectrum responds to the changes in the vibrational-rotational state of molecules or atomic groups. Therefore, the IR spectrum of a sample may identify the presence of some compounds and reveal interactions between their atomic groups. A common range investigated at an IR measurement is 4000 – 400 cm⁻¹. A lot of compounds have got absorption bands in this range and can be identified for this. An IR spectrum of a sample can be collected by various measuring methods. For example, solid specimens can be mixed with KBr and pressed into a pellet, for liquid samples a ZnSe cell may be suitable. These materials cause a lower wavenumber-limit of the obtainable spectrum for their absorption (KBr ca. 400 cm⁻¹, ZnSe ca. 530 cm⁻¹ when measuring in transmission mode).

We utilized IR spectroscopy to characterise the components of MFs proposed for various employments. We tried to reveal possible interactions between these components and to confirm the presence of required compounds.

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